Update on Houston-Galveston-Brazoria (HGB) NOx and VOC Emission Reduction Credits (ERCs) and MECT NOx Allowances

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CONFIDENTIAL AND PROPRIETARY
Launched in 2005, Element Markets has become the leading marketer of environmental commodities in the U.S.

- Leading marketer of environmental commodities with a focus on Emissions, GHG, and Renewable Energy (Energy and Transportation Credits), and Biomethane
- Over $1.6 Billion in environmental commodities transacted since inception in 2005
- Environmental Asset Management Services for over 8,000 MW of generation
- Customer base of over 700 companies within the environmental markets
- Leading Emissions Credit Marketer in the Texas market for over 8 years

### Business Units

#### Renewable Energy Group
- Biogas Development
- Credit Marketing

#### Greenhouse Gas (GHG) and Emissions Services
- GHG Offset Projects
- Credit Marketing
CURRENT TEXAS NONATTAINMENT AREAS

- Houston-Galveston-Brazoria (HGB), Texas
- Dallas-Fort Worth, Texas

As of January 30th, 2015

8-hour Ozone Nonattainment Areas

2008 8-hour Ozone Nonattainment Areas

- Extreme
- Severe 15
- Serious
- Moderate
- Marginal
POTENTIAL NONATTAINMENT AREAS, 70 ppb

Source: URS, Counties at Risk of Nonattainment with the 2015 Ozone Standard
POTENTIAL NONATTAINMENT AREAS, 65 ppb

Source: URS, Counties at Risk of Nonattainment with the 2015 Ozone Standard
HGB REQUIREMENT TO OFFSET

For NOx and VOC emissions in Houston-Galveston-Brazoria (HGB):

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Potential to Emit (PTE)</th>
<th>Required to Offset</th>
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</thead>
<tbody>
<tr>
<td>New facility</td>
<td>&gt; 25 tons</td>
<td>All emissions (to zero)</td>
</tr>
<tr>
<td>Major modification</td>
<td>&gt; 25 tons</td>
<td>All emissions (to zero)</td>
</tr>
</tbody>
</table>

Facilities with NOx PTE > 10 tons are included in the MECT NOx program

Example. New facility with PTE > 25

![Graph showing PTE, Required to Offset, and ERCs Required]
HGB EMISSION REDUCTION CREDITS & ALLOWANCES

- ERCs
  - One-time purchase/offset potential to emit
  - Perpetual right to operate under air permit
  - Expires after 5 years if not applied to permit
  - ERCs are created upon shutdown, process change, or installed control technology

- MECT/HRVOC Allowances
  - Annual Program
  - Compliance each year
  - Can sell excess or buy shortfall
  - Supply of Allowances is capped and usually reduced over time
  - Allowances allocated at start of program from a historical baseline
  - New facilities do not receive allocation, but must buy in the marketplace
MECT NOx: Trades in MECT NOx Allowances represented in tons/year
- Implemented in HGB in 2002
- Initial allocations based on 1997-1999 baseline, declining to 80% reduction by 2008

HRVOC: Trades in HRVOC Allowances represented in tons/year
- Initial cap of 3,451.5 tons
  - 25% cap reduction between 2014 and 2017

Transaction types:
- Stream (Perpetuity): Good for the life of the program
- Current: Good for the current and next compliance year
- Vintage: Good for the year immediately following the credit’s vintage year
TCEQ MECT NOx STREAM ALLOWANCE TRANSACTIONS

![Chart showing the price and volume of NOx stream allowance transactions from November 2002 to May 2015. The x-axis represents the volume in tons, ranging from 0 to 450, and the y-axis represents the price in $/ton, ranging from $0 to $200,000. The chart includes data points for each month from November 2002 to May 2015, showing the fluctuation in price and volume over time.](chart.png)
HGB MECT NOx SUPPLY vs. DEMAND

![Graph showing supply vs. demand for HGB MECT NOx with years from 2002 to 2013 on the x-axis and emissions against actual allowances, surplus, and % oversupplied on the y-axis.]

- **Emissions Against Actual Allowances**
- **Surplus**
- **% oversupplied**

The graph illustrates the balance between supply and demand for HGB MECT NOx emissions over the years 2002 to 2013. The y-axis represents total yearly allocation, while the x-axis shows the years from 2002 to 2013. The percentage oversupplied is indicated with diamonds, with colors representing surplus and emissions against actual allowances.
Surge in project development in HGB in 2012-2014
Prices of emission credits and allowances have increased significantly
  - For example: VOC Emission Reduction Credits had increased in price by over 6,000% since the start of 2011
STATS ON HGB NOx AND VOC REGISTRY

- High majority of ERCs on the registry are held by companies with projects
- VOC ERCs on registry held by 14 distinct companies, of which 7 hold 90%
- NOx ERCs on registry held by 17 distinct companies, of which 5 hold 79%
Emissions must have been reported or represented in inventory used for SIP determinations

For a permanent shutdown, the entire permit must be voided

To apply for certification, applicants must submit Form EC-1

Once approved, TCEQ will list on the Emission Reduction Credit Registry

Reductions must be reviewed and approved by TCEQ

Once certified, ERCs are available for trade or use

ERC GENERATION - PERMANENT REDUCTION IN VOC OR NOx EMISSIONS
CREATE NOx ERCs AND SURRENDER MECT NOx

- Process for surrender of MECT NOx and creation of NOx ERCs:
  - Surrender Permits
  - Turn in EC-1 within 180 days of implementation of reduction strategy
  - TCEQ reviews the EC-1 form
  - Once TCEQ verifies the ERC generation amount
  - TCEQ requests an equal amount of the stream trade (surrender)
  - After stream trade is complete, TCEQ issues the NOx ERCs.

An entity is able buy or swap for any MECT allowance to be surrendered if they are not in held by entity.
OFFSETTING VOC IN HGB

- Provide HGB VOC ERCs
  - Historical Route

- Provide HGB VOC DERCs for every year of operation
  - Limited due to Supply of VOC DERCs

- Provide HGB NOx DERCs for every year of operation
  - Modeling, EPA and TCEQ approval

- Provide HGB NOx ERCs
  - Modeling, EPA and TCEQ approval

- Provide DFW VOC ERCs
  - Modeling, EPA and TCEQ approval
OFFSETTING NOx IN HGB

- NOx ERCs
  - Historical Route

- NOx DERCs

- MECT NOx Allowances
  - Preferred Route as allows the 1:1 to offset both NSR permit and Annual Compliance with MECT
THANK YOU

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“US Emissions House of the Year”, 2014 and 2010 by Energy Risk

Energy Risk Environmental Rankings
• #1 U.S. Regional Greenhouse Gas Dealer
• #1 U.S. Voluntary GHG Credit Dealer
• #2 Renewable Energy Credit Dealer
  • #1 NOx & SO₂ Dealer

Environmental Finance Magazine
• Best Trading Company in North American Renewable Energy
• Runner-Up, Best Trading Company of North American GHG Markets (California)
  • Best Trading NOx & SO₂ Company Emission Credits